

**Clean Beaches Initiative
Urban Runoff/Water Quality Improvement Projects – Annual Progress Summary #1**

City: **Unincorporated San Mateo County, north of the City of Half Moon Bay**

Project Name: **Identification of Sources of Fecal Pollution Impacting Pillar Point Harbor**

Project Description/Purpose/Approach:

The goal of this project is to assess and identify sources of fecal pollution in Pillar Point Harbor and recommend opportunities for remediation.

Water will be sampled in select locations and tested for the presence and abundance of bacteria that occur with fecal pollution, and bacteria samples will be genetically tested to determine their original host source. The primary focus is Capistrano Beach, which has well documented levels of fecal pollution. The secondary focus is the five other beaches and liveaboard boats in the harbor. Specific objectives for implementation of water quality remediation projects will be developed based on research and analysis.

Pillar Point Harbor water quality chronically is so poor that the location was included on the 303(d) list. Capistrano Beach has elevated levels of fecal indicator bacteria, such as *E. coli* and *Enterococcus* on over 95% of sampling events in wet and dry conditions. This beach has been ranked for several years by the Heal the Bay's Report Card as a "Beach Bummer," meaning that it is in the top ten most polluted beaches in California in dry weather conditions. In 2005/2006, Capistrano Beach ranked sixth on the "Beach Bummer" list. It was the worst ranked beach in Northern California and is a Clean Beaches Task Force Priority Beach with regard to fecal pollution. Capistrano Beach is permanently posted by the San Mateo County Environmental Health Department as a potential health hazard.

In 2005 and 2006, San Mateo County Department of Environmental Health repeatedly posted beaches in the Harbor as potential health hazards. Capistrano Beach was posted most frequently, approximately 50 weeks in each year. Marsh Beach was posted over 20 weeks in each year, 42% to 51% of sampling events. Mavericks Beach was posted approximately 15 weeks each year, approximately 30% of sampling events. The county terminated sampling for Capistrano Beach and permanently posted the beach as a potential health hazard in March of 2006.

Within the local community there are numerous opinions as to the primary sources of fecal pollution impacting the harbor, including human contamination from leaking sewer lines, avian contamination from resident and migratory bird populations including large flocks of gulls and other birds, and lack of flushing in the harbor due to the presence of two breakwalls. Although much effort has been expended on studying the locations of fecal pollution impacting the harbor, including water sampling and fecal indicator enumeration studies, data on identification of primary sources and their relative contributions to the overall magnitude of the pollution problem are lacking. There has been an urgent need for a comprehensive study of all of the possible sources of pollution in this watershed and how these flows interact in the confines of the enclosed Pillar Point Harbor bay.

Project Scope:

Microbial source tracking (MST) will identify and estimate relative contributions of fecal pollution arising from human, avian, dog, horse, cattle and other host sources. Pollutants will be tracked to their sources by scoping storm drains and sewer lines and conducting hydrologic studies, sanitary surveys, fecal indicator enumeration of *E. coli* and *Enterococcus*, and by watershed sanitary surveys. Other factors which may impact fecal contamination in Pillar Point Harbor will be investigated, including hydrologic parameters, sewer line integrity, and inflow sources.

Progress/ Milestones Achieved/Schedule:

A 17- member Technical Advisory Committee (TAC) was established in October 2007 and continues to convene. Subgroups of the TAC and individual members provided additional assistance as needed.

A Monitoring Plan and Quality Assurance Project Plan were completed and approved by the State Water Resources Control Board in February 2008.

Contracts with the lead researcher and with hydrologists were executed in winter and spring 2008.

A review and analysis of existing literature and data relevant to potential sources of fecal contamination impacting the harbor was completed in March 2008.

A set of hypotheses was created in October 2007 and refined in June 2008 by the lead researcher with input from the TAC.

Preliminary MST investigations were conducted February and June 2008.

Preliminary sanitary surveys of Denniston, Deer Creek, and San Augustine watersheds were conducted throughout spring 2008.

Water samples were collected biweekly at Capistrano Beach as well as sites identified during sanitary surveys and enumerated for FIB beginning early spring.



Stream gauges were installed in Deer and Denniston Creeks and the marsh in February 2008, and preliminary terrestrial hydrologic data have been collected since.

A harbor circulation study was conducted in September 2008 with approximately 100 volunteers. Dye and drogues were released at four locations in the harbor. Water samples were collected over a three-day period for MST, FIB enumeration, and to detect the presence of the dye. Observations of the drogues were also recorded.

Other Public Agency/Private Partners: State Water Resources Control Board, Sewer Authority Midcoastside, California Coastal Commission, San Francisco Bay Regional Water Quality Control Board, UC Davis, Balance Hydrologics, San Mateo County Public Health Laboratory, Granada Sanitary District, San Mateo County Environmental Health Services, City of Santa Barbara Creeks Division, Natural Resources Conservation Service, San Mateo County Harbor District, San Francisco Estuary Institute, Surfrider San Mateo County, County of Santa Cruz Environmental Health Services.

Project Cost: \$994,837

Project Funding Sources: State Water Resources Control Board and in-kind match funds

Clean Beaches Initiative Funding: \$845,611

Project Outcomes/Effectiveness/Benefits:

The goal of this project is to assess and identify sources of fecal pollution in Pillar Point Harbor and recommend opportunities for remediation. The approved Monitoring Plan and Quality Assurance Project Plan developed for this project will be implemented to ensure high-quality data are obtained. These investigations and the resulting prioritized recommendations are essential for a second phase to implement projects to improve water quality at public beaches in the Pillar Point Harbor. Stakeholders are committed to a second phase in which they pursue implementation of these recommendations and recognize this first phase as an essential step toward that end. Stakeholders value that the overall vision of this project is to reduce the number of days that the beaches are posted or closed, requiring implementation of proposed projects.